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## MODULE 2

### CONTAINER FACILITY DESIGN AND CONSTRUCTION

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## **Introduction to Module 2: Container Facility Design and Construction**

This module describes the RCRA requirements that apply primarily to the container storage area itself, rather than the hazardous or mixed waste, the containers, or facility operating procedures. Line management and environmental oversight personnel should use this module to:

- ensure compliance with container storage area standards such as design requirements, aisle spacing, containment system specifications, and location standards;
- develop a system to maintain security at the container storage area and prevent unauthorized entry; and
- ensure compliance with RCRA permit application, modification, and reapplication procedures, as well as interim status standards if the container storage area has not yet received a permit.

The following flowchart and accompanying narrative discussion guides you step-by-step through the applicable requirements for container storage areas.

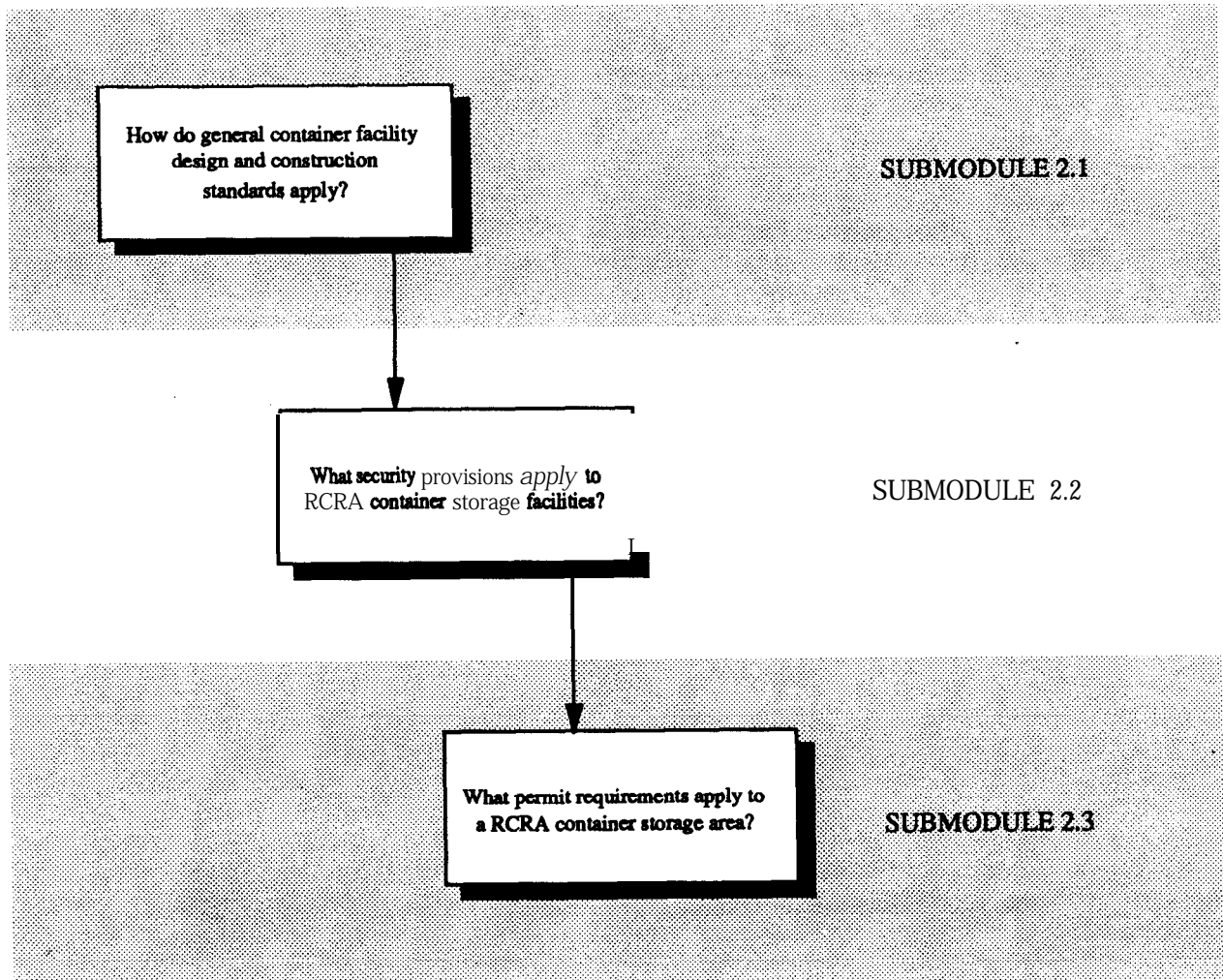
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# OVERVIEW OF MODULE 2: CONTAINER FACILITY DESIGN AND CONSTRUCTION

CRITICAL ISSUES

SUBMODULES CONTAINING GUIDANCE  
ON CRITICAL ISSUES

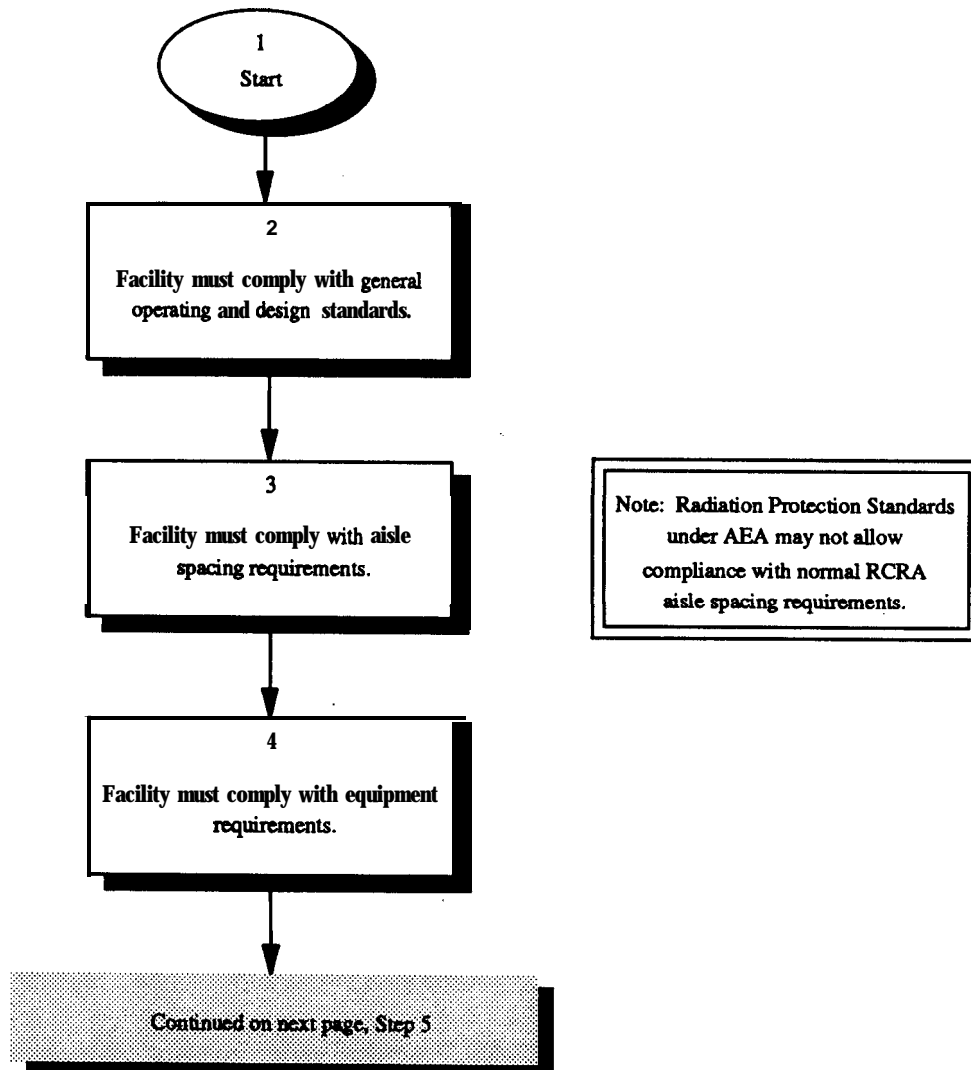


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## Module 2: Flowchart

### SUBMODULE 2.1: GENERAL, CONTAINER FACILITY DESIGN AND CONSTRUCTION STANDARDS



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## SUBMODULE 2.1: GENERAL CONTAINER FACILITY DESIGN AND CONSTRUCTION STANDARDS

**Step 1** Start.

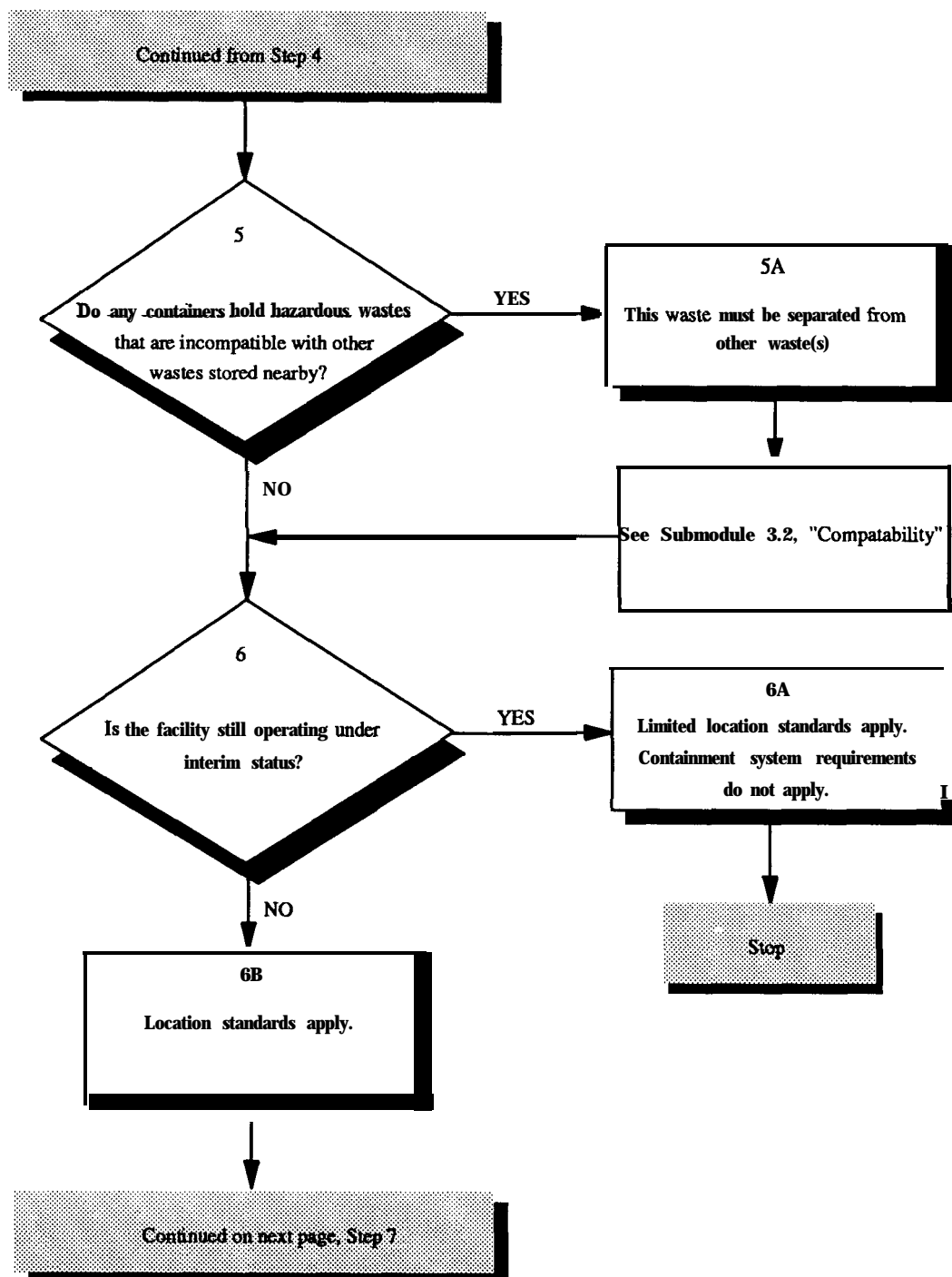
**Step 2** Both permitted and interim status container storage areas are subject to the general design and operation standards located in 40 CFR Parts 264 and 265 Subpart B, respectively, and described in subsequent submodules of this guidance document (e.g., Submodule 4.2, "Security," Submodule 3.4, "Inspections," Submodule 3.2, "Compatibility").

**Step 3** Waste management personnel at container storage areas must maintain sufficient aisle space to allow unobstructed movement of personnel and emergency equipment to any area of a facility, unless they can demonstrate that aisle space is not needed for these purposes (40 CFR 264.35). This demonstration must be included with Part B of the RCRA permit application. See Exhibit 2.1.1 at the end of this submodule for an example of container configurations. Note that if such configurations are submitted with a Part B permit application, they should be clearly marked as "typical" or "example."

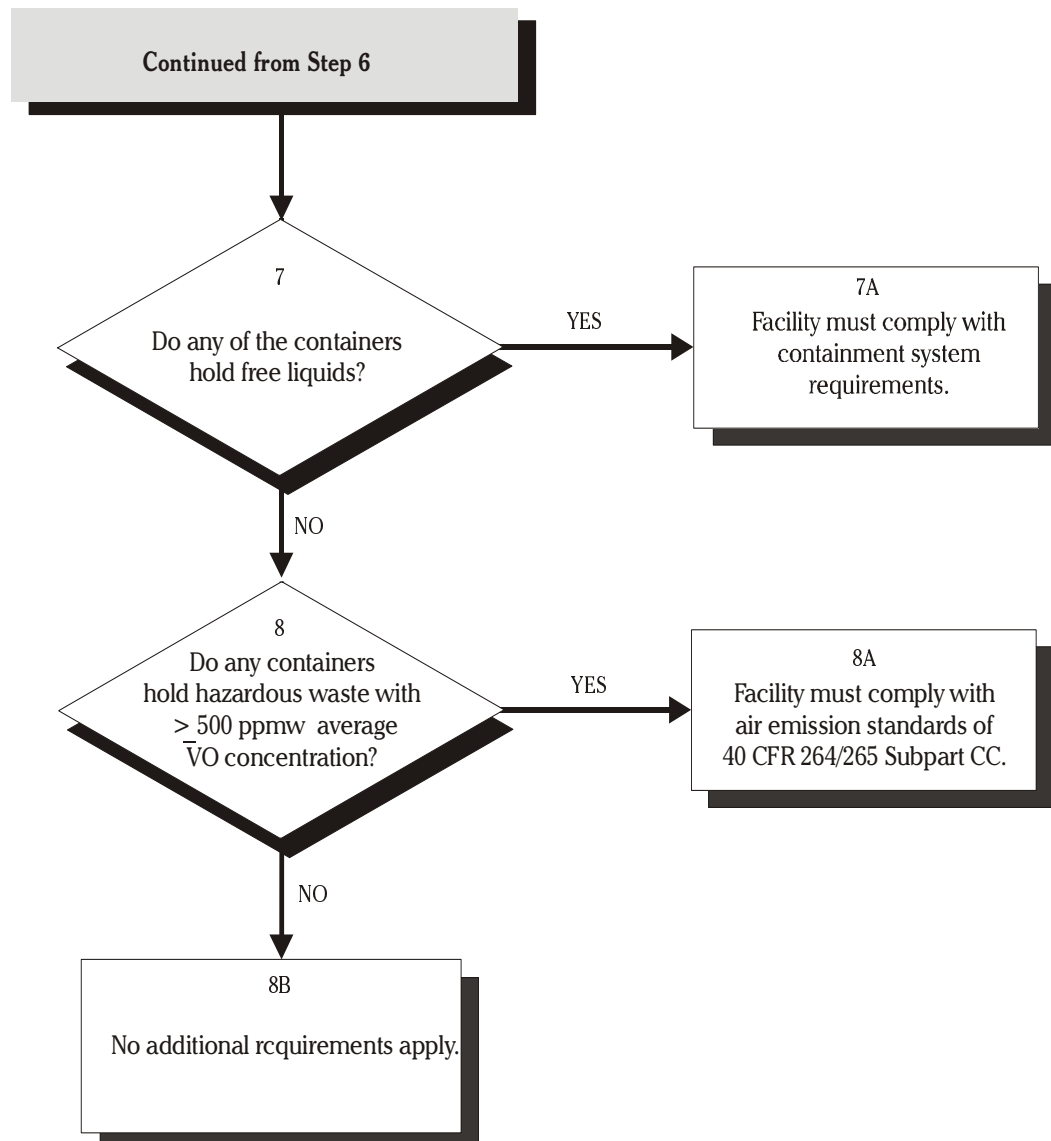
*NOTE: For some of DOE's radioactive mixed waste streams, compliance with normal RCRA aisle space requirements could result in radiological exposures to workers that exceed applicable occupational exposure standards found in DOE Order 5480.11. DOE often stores containers of mixed transuranic waste in configurations with less aisle space than required by RCRA for hazardous waste. Such "dense-pack" configurations reduce radiation exposures to workers and the environment by increasing the amount of shielding beyond that which would occur if the required aisle space were provided. This safer configuration ensures that worker exposures are below numerical occupational radiation exposure limits, but is a violation of normal RCRA requirements. In such cases, DOE field offices should seek agreement with the EPA or authorized State on alternative approaches to this waste management activity that would ensure worker protection and protect human health and the environment (pursuant to RCRA Section 1006(a), which defers to the AEA in the event of inconsistent requirements). Such an alternative could require DOE to store the waste in dense-pack configurations but to use robotics, cameras, and release detection equipment, rather than workers, to ensure that leaks are detected and do not enter the environment. (See also Submodule 3.4, "Inspections").*

**Step 4** All DOE container storage areas must be equipped with an internal communications or alarm system; an external communications system to summon emergency response teams; portable fire extinguishers, fire control equipment and decontamination equipment; and adequate water supplies for the equipment. All required emergency equipment must be tested and maintained as necessary to ensure proper operation in case of an emergency. Waste management personnel must have immediate access--directly or through another employee--to an internal alarm or emergency communication device, whenever hazardous waste is being poured, mixed, spread, or otherwise handled. If only one employee is on the premises during a facility's operation, that person must have immediate access to an external communication device to summon emergency assistance (40 CFR 264.32 - 264.35).

Waste management personnel may be exempt from one or more of these requirements, if they can demonstrate that none of the hazards posed by waste handled at the facility require one or more of the types of equipment described in this paragraph. This demonstration must be included with Part B of the RCRA permit application.



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- Step 5** Waste management personnel must determine whether any of the containers in container storage areas are holding hazardous waste that is incompatible with other waste stored nearby (i.e., commingling with another waste under uncontrolled conditions might yield heat or pressure, fire or explosion, violent reaction, toxic dusts, mists, fumes, or gases, or flammable fumes or gases). Submodule 3.2, "Compatibility," will assist waste management personnel in determining the compatibility of wastes with one another.
- Step 5A** DOE container storage areas that do contain hazardous waste that is incompatible with other waste stored nearby must separate such waste by a wall, dike, berm or other device.
- Step 6** Waste management personnel must determine whether their facility has interim status, as discussed in Submodule 2.3, "Permitting," and Module 1, "Applicability."
- Step 6A** Interim status container storage areas may not be located in a salt dome, salt bed formation, underground mine or cave, except for DOE's Waste Isolation Pilot Project (WIPP) in New Mexico (40 CFR 265.18). Permitted facilities must comply with more extensive RCRA location standards and consider siting requirements in other Federal laws (see Step 6B below). In addition, there are no specific containment system requirements (e.g., construction on impervious base, run-on control systems, dikes, spill collection systems as in 40 CFR 264.175) for interim status container storage areas, except for containers holding hazardous wastes that are incompatible with other waste stored nearby, as described in Step 5.
- Step 6B** Permitted facilities must comply with RCRA location standards and consider the siting requirements in the following Federal laws: 40 CFR 270.3 lists the other Federal laws that may apply to the siting of RCRA facilities. These laws include: the Wild and Scenic Rivers Act (16 U.S.C. 1273 et seq.); the National Historic Preservation Act (16 U.S.C. 470 et seq.); the Endangered Species Act (16 U.S.C. 1531 et seq.); the Coastal Zone Management Act (16 U.S.C. 1451 et seq.); the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.); and Executive Orders.
- Permitted container storage areas must comply with the RCRA location standards of 40 CFR 264.18 relating to seismic zones and floodplains. The seismic zone standards stipulate that a new container storage area, or any portion thereof, must not be located within 61 meters (200 feet) of a fault that has had displacement in Holocene time.
- To streamline the process of determining whether a facility is potentially restricted from a given area, EPA developed a list of political jurisdictions that have faults with Holocene epoch displacement. These jurisdictions are listed in Appendix VI of 40 CFR Part 264. If a DOE container storage area is to be located within one of the listed jurisdictions, it must be verified that the facility will not violate the location standards. A facility located in a jurisdiction that is not listed is assumed to be in compliance with the seismic zone location standards.
- The floodplain location standards require that permitted container storage areas located in a 100-year floodplain must be designed, constructed and operated to prevent a washout of any hazardous waste by a 100-year flood unless waste management personnel can demonstrate in the RCRA Part B permit application that they have developed procedures for removing the waste before flood waters reach the facility. Removed waste must be sent to either a permitted or interim status hazardous waste facility.





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<b>Step 7</b>	Waste management personnel must determine whether any of the containers in their storage area(s) contain any free liquids.
<b>Step 7A</b>	Permitted container storage areas in which the containers hold free liquids must have containment systems with an impervious base that is sloped to prevent the accumulation of liquids, unless the containers are elevated or otherwise protected from liquid accumulation. The containment system must have enough capacity to hold 10 percent of the volume of the containers (not including containers holding non-free liquids) or the volume of the largest container, whichever is greater (40 CFR 264.175). In addition, waste management personnel must prevent run-on from entering the containment system, unless the collection system has sufficient excess capacity, in addition to that required above, to contain run-on. Spilled or leaked waste and accumulated precipitation must be removed to prevent overflow of the collection system. If the collected material is defined as a hazardous waste under 40 CFR Part 261, it must be managed as a hazardous waste in accordance with Parts 262-268. If the collected material is released through a point source discharge to waters of the United States, it is subject to the requirements of Section 402 of the Clean Water Act, as amended.
<b>Step 7B</b>	Container storage areas at DOE facilities exclusively holding wastes that do not contain any free liquids do not need a containment system, provided that: the storage area is sloped or otherwise designed to remove liquids; the containers are elevated or protected from potential liquid accumulation; and the containers do not contain FO20-FO23, FO26, or FO27 wastes.
<b>Step 8</b>	Waste management personnel must determine whether any of the containers in their area(s) are used to manage hazardous waste that, at the point of waste origination, has an average volatile organic (VO) concentration greater than or equal to 500 parts per million by weight (ppmw).
<b>Step 8A</b>	<p>Affected permitted, interim status, and large quantity (90-day) generator (i.e., persons that in any given month generate more than 1000 kg of hazardous waste or radioactive mixed waste or 1 kilogram of acutely hazardous or radioactive mixed waste ) storage areas must comply with the 40 CFR 264/265 <i>Subpart CC organic air emission standards</i>. Container design standards are organized into three levels (Levels 1, 2, and 3) based on container design capacity, total organic content of the waste, and use of the container. They are found in 40 CFR 264.1086 (for permitted facilities) and 40 CFR 265.1087 (for interim status facilities and affected generators) and, depending on the level of control, may require the affected container to:</p> <ul style="list-style-type: none"><li>• meet DOT standards (49 CFR Parts 173, 178, 179 and 180);</li><li>• have a cover and closure device that forms a continuous barrier over the container so that there are no visible gaps;</li><li>• be an open-top container that has a barrier placed on or over the hazardous waste that suppresses organic vapors so that no hazardous waste is exposed to the atmosphere;</li><li>• operate with no detectable organic emissions as defined in 40 CFR 265.1081;</li><li>• have been tested within the last 12 months to be vapor tight by using 40 CFR Part 60, appendix A, Method 27;</li><li>• be covered and vented directly through a closed-vent system to a control device; or</li><li>• be open and located inside an enclosure which is exhausted through a closed-vent system to a control device.</li></ul>
<b>Step 8B</b>	Container storage areas at DOE facilities exclusively holding wastes that fall below the average VO concentration threshold (500 ppmw) as well as containers that are explicitly exempted do not need to comply with <i>Subpart CC container design standards</i> . Examples of exempted containers include those that have design capacities less than or equal to 0.1 <sup>3</sup> m (26.4 gallons), containers that are used <i>solely</i> for managing remediation wastes or radioactive mixed waste, and containers holding waste that meets all applicable land disposal restrictions (LDR) treatment standards.

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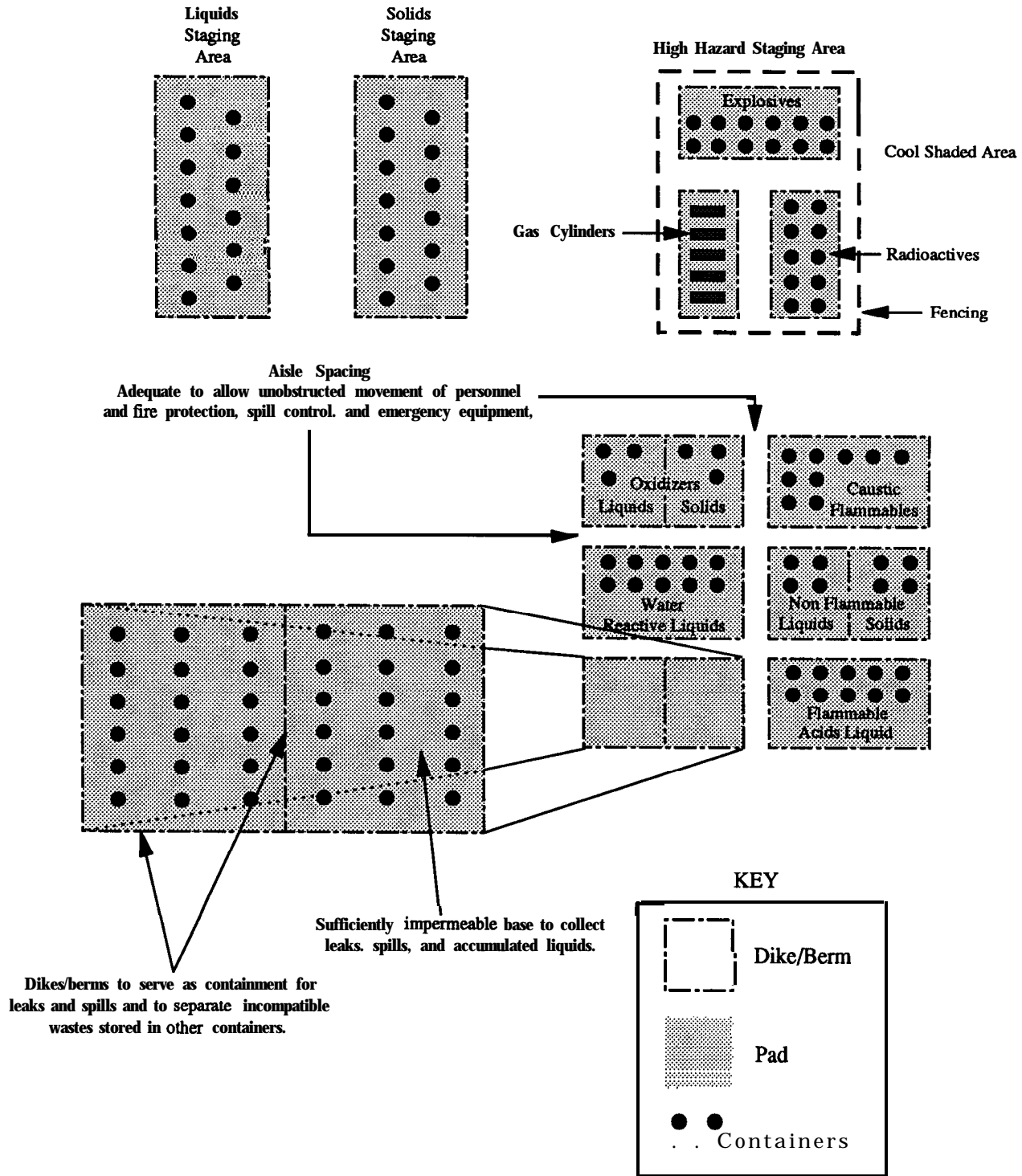
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### ***REFERENCES FOR SUBMODULE 2.1***

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- 1) *Guidance for Permit Writers: Facilities Storing Hazardous Waste in Containers*, U.S. Environmental Protection Agency, Office of Solid Waste, 1982.
- 2) 40 CFR 264 Subpart B -- General facility standards.
- 3) 40 CFR 264 Subpart C -- Preparedness and prevention.
- 4) 40 CFR 264.175 -- Containment.
- 5) *Organic Air Emission Standards; Revised Final Rule Issued*, U.S. Department of Energy, Office of Environment, Safety, and Health, RCRA/CERCLA Division, RCRA Regulatory Bulletin, September 1997
- 6) *RCRA Subpart CC Organic Air Emission Standards: Containers*, DOE/EH-413/9801, U.S. Department of Energy, Office of Environment, Safety, and Health, RCRA/CERCLA Division, RCRA Information Brief, March 1998.

## Exhibit 2.1.1 Sample Container Storage Area Configuration



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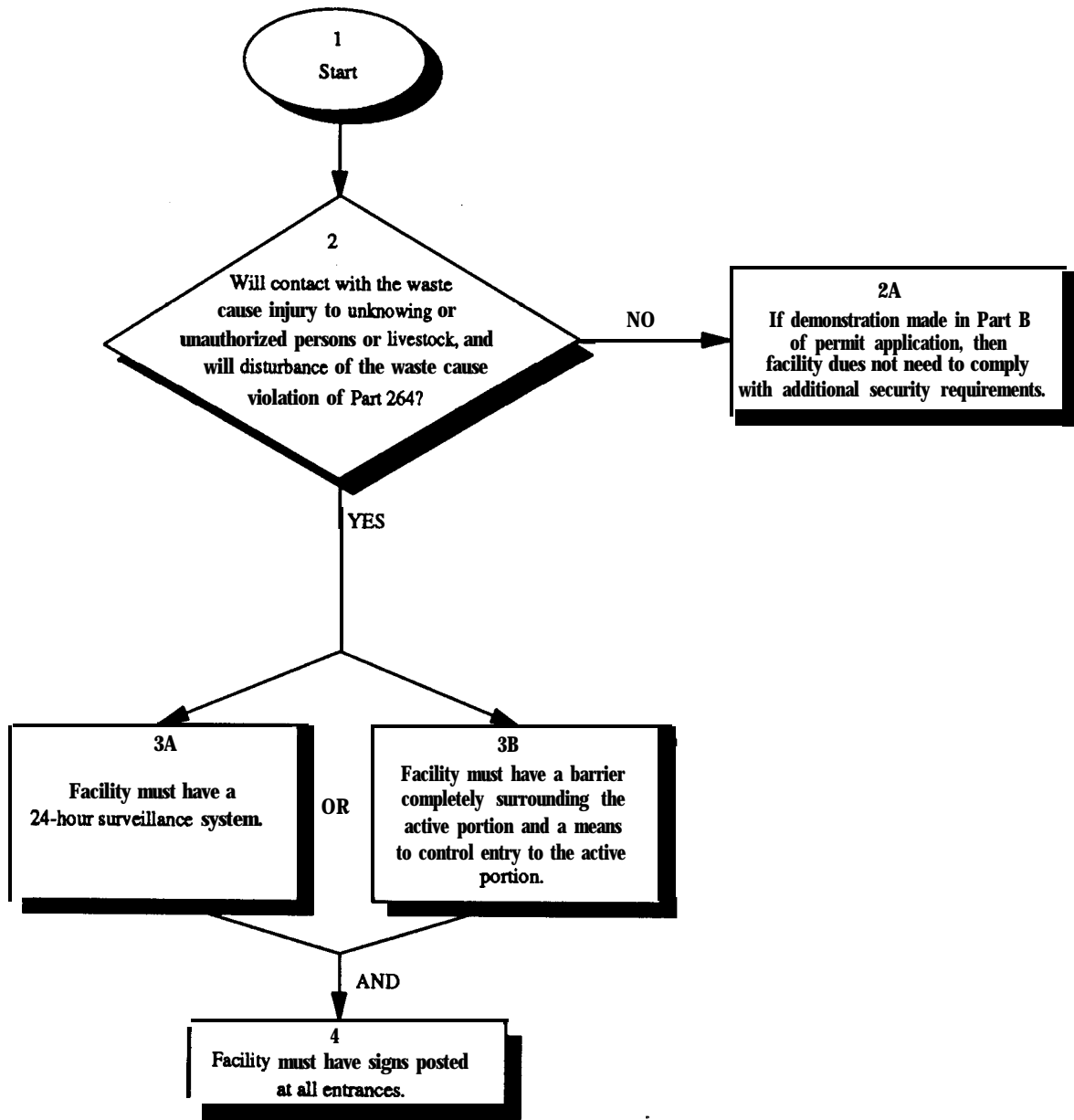
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## Module 2: Flowchart

### SUBMODULE 2.2: SECURITY PROVISIONS



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## SUBMODULE 2.2: SECURITY PROVISIONS

- Step 1** Start.
- Step 2** Waste management personnel must prevent unknowing entry, and minimize the possibility of unauthorized entry, of persons or livestock into container storage areas<sup>1</sup>, unless it can be demonstrated that: (1) physical contact with the waste, structures, or equipment within the unit will not injure such persons or livestock which may enter; and (2) disturbance of the waste or equipment by unknowing or unauthorized persons or livestock will not cause a violation (e.g., mixing of incompatible waste) of the hazardous waste management requirements of 40 CFR Part 264.
- Step 2A** If waste management personnel demonstrate that the container storage area meets the above two requirements, then the unit need not comply with the remaining security requirements of 40 CFR 264.14. This demonstration must be made in Part B of the permit application.
- Step 3A** If waste management personnel do not demonstrate that the facility meets the two requirements in Step 2, then the container storage must have a 24-hour surveillance system which continuously monitors and controls entry onto the active portions of the unit; or
- Step 3B** The container storage area must have an artificial (e.g., fence) or natural barrier which completely surrounds the unit and a means to control entry, at all times until closure, through the gates or other entrances to the unit.
- Step 4** If waste management personnel do not demonstrate that the container storage area meets the two requirements in Step 2, then the facility must have signs with the legend "Danger-Unauthorized Personnel Keep Out" posted at all entrances and in sufficient numbers to be seen from any approach to the active portion of the unit. The legend must be written in English and in any other language predominant in the area surrounding the unit, and must be legible from a distance of at least 25 feet.

### *REFERENCES FOR SUBMODULE 2.2*

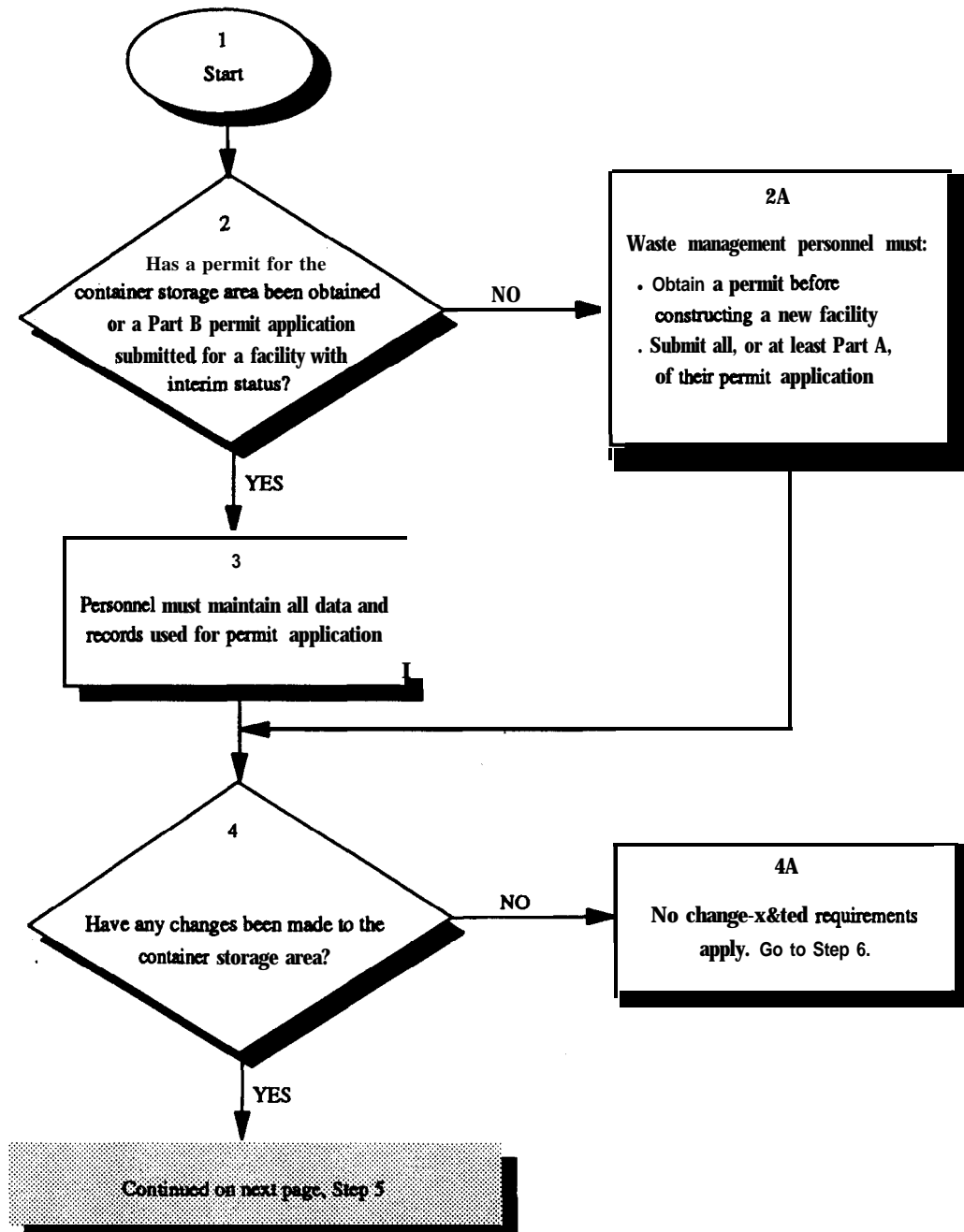
- 1) 40 CFR 264.14 -- Security.

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<sup>1</sup> The security requirements for a container storage area are met if it is located within a facility that meets these requirements.

## Module 2: Flowchart

### SUBMODULE 2.3: PERMITTING



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## SUBMODULE 2.3: PERMITTING

**Step 1** Start.

**Step 2** To operate a container storage area, waste management personnel must have either obtained a permit, or submitted a permit application and complied with the interim status standards of 40 CFR Part 265. Permits identify the administrative and technical standards to which facilities must adhere. Permits can be issued by EPA or an authorized State. If the container storage area is the only hazardous waste management unit at a facility, the permit is issued for the container storage area alone; however, in most cases, waste management personnel will obtain a RCRA permit for a facility with many units, only some of which will be container storage areas.

**Step 2A** Waste management personnel must submit Parts A and B of a permit application and receive a RCRA permit before constructing a new container storage area. 40 CFR Part 270 Subparts B-D detail the RCRA permitting requirements. Permit applications contain Parts A and B - Part A contains general information about a facility, such as the facility's name and location, while Part B includes a facility's description, operating procedures, and a closure plan, for example. Since there is no standard format for a Part B application, waste management personnel should consult the regulations (40 CFR Parts 264 and 270) and EPA guidance (see references at the end of this submodule).

In addition to the general Part B information, the application must contain the following additional information: a description of the containment system (e.g., basic design parameters, construction materials); the maximum amounts and types of wastes that may be handled; a description of the containers to be used; sketches, drawings, or data exhibiting compliance with separation requirements for containers that will hold ignitable, incompatible, or reactive wastes; and a description of the procedures that will be used to handle such wastes. If the containers will hold wastes with no free liquids, the container storage area does not need a containment system, provided that line management personnel can demonstrate in the permit application through test procedures on the waste and design drawings and descriptions, that the storage area complies with the design requirements of 40 CFR 264.175(c). Also, applicants must identify each area managing hazardous waste possessing greater than or equal to 500 ppmw average VO concentrations in containers, submit documentation for each enclosure used to control air emissions from containers and an emissions monitoring plan, and, when appropriate, certify that the organic air emission standards codified under [40 CFR Part 264, Subpart CC](#) are met.

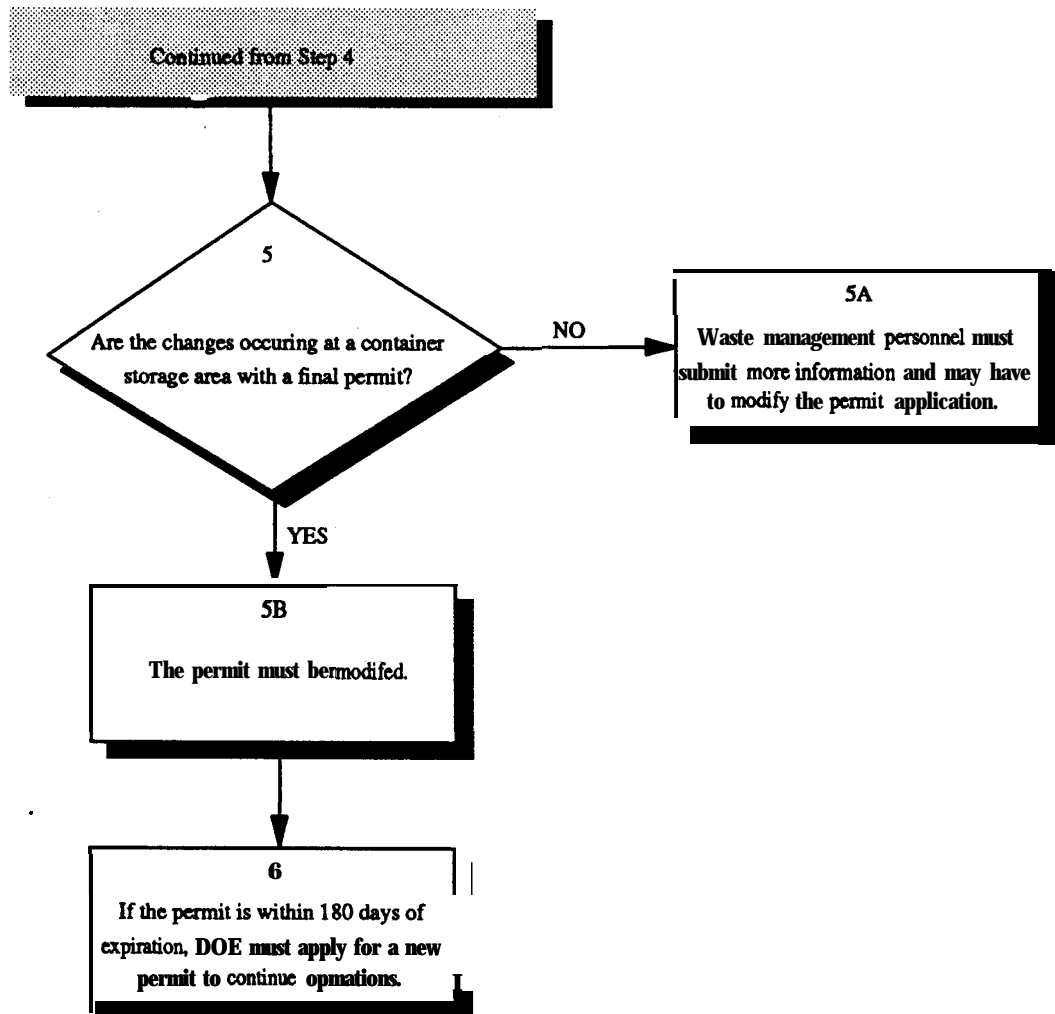
Existing container storage areas may operate under interim status as long as they have submitted Part A of the permit application and comply with interim status requirements until a final permit decision is made. Part B permit applications must be submitted in accordance with deadlines established by regulation (40 CFR 270.73) or by the Regional Administrator or State Director. Waste management personnel may voluntarily submit a Part B anytime before these deadlines pass.

**Step 3** Waste management personnel must keep records of all data used to complete permit applications and any supplemental information for at least three years from the date the application is signed. After a RCRA Permit is obtained, additional recordkeeping and reporting requirements (e.g., Biennial Report) apply to the facility. Consult Submodule 3.6 "Manifesting and Recordkeeping" for a discussion of these requirements.

**Step 4** Changes to the container storage area (e.g. increases in storage) or to its operating procedures (e.g., storage of new waste types), will require waste management personnel to either seek a permit modification, or submit additional information to amend a previously submitted, yet unapproved permit application. Consult Step 5A for more details.

**Step 4A** If no changes have occurred to the containers, storage area, or operating procedures, waste management personnel need not submit materials or seek a permit modification.





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<b>Step 5</b>	The appropriate response to changes at a container storage area will depend upon the permitting status of the facility. For a permitted facility, the types of changes requiring a permit modification are categorized in 40 CFR Part 270, Appendix I. Waste management personnel operating container storage areas in States authorized to issue permits should consult State requirements to determine if they are different (i.e. more stringent) from the Federal standards.
<b>Step 5A</b>	<p>The types of changes allowed at interim status facilities (subject to approval by the Regional Administrator or State Director) are specified in 40 CFR 270.72. These include: storage of new wastes; increases in storage capacity; changes in operating procedures; changes in operational control of the facility; or changes made in accordance with a corrective action order or other Federal or State enforcement authority.</p> <p>When these types of changes occur at an interim status facility, waste management personnel must provide additional information (as specified in 40 CFR 270.72) to the Regional Administrator or State Director. At the administrator's discretion, it may also be necessary to modify the permit application.</p>
<b>Step 5B</b>	<p>Permit modifications may be initiated by the DOE facility or by the EPA Regional Administrator or State Director if they determine that sufficient grounds for a modification of a permit exist for a container storage area. When a permit is modified, only the conditions subject to the modification are reopened; however, if a permit is revoked and reissued, the entire permit is subject to revision.</p> <p>The Regional Administrator or State Director may initiate a permit modification if: the facility or its operations are altered significantly; new information about the facility becomes available; new statutory or regulatory requirements are enacted; unanticipated events occur (e.g., earthquake); or human health or the environment is otherwise threatened (40 CFR 270.41).</p> <p>Appendix I of 40 CFR Part 270 lists three classes of changes to a facility in which a permittee may request a permit modification. In general, the higher the class, the more substantial the modification. For example, modification of a container storage unit without increasing the capacity of the unit is a Class 1 modification. Storage or treatment of different wastes in containers is also a Class 1 modification, for most wastes. Modification or addition of container units resulting in up to a 25 percent increase in the facility's container storage capacity is a Class 2 modification, while an increase of more than 25 percent would be a Class 3 modification.</p> <p>Waste management personnel are required to undertake certain steps (e.g., notify the Regional Administrator, provide for public comment), specified in 40 CFR 270 Subpart D, that vary depending on the type of modification. For example, Class 2 and 3 modifications require announcement of a 60-day public comment period, while Class 1 modifications primarily require providing notice to the Regional Administrator or State Director and all other people on a facility's mailing list.</p>
<b>Step 6</b>	If a container storage area is permitted and waste management personnel wish to continue operating the unit after the initial permit application expires, they must apply for a new permit at least 180 days before the expiration date of the current permit, unless granted an extension by the Regional Administrator or State Director.

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### ***REFERENCES FOR SUBMODULE 2.3***

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- 1) *Federal Environmental Permitting Handbook*, U.S. Department of Energy, Office of Environmental Guidance, RCRA/CERCLA Division, OEG (RCRA)-003/0591, May 1991.
- 2) *Model RCRA Permit for Hazardous Waste Management Facilities*, U.S. Environmental Protection Agency, September 1988.
- 3) *Federal Environmental Reporting Requirements Handbook*, U.S. Department of Energy, RCRA/CERCLA Division, Office of Environmental Guidance, EGD(CERCLA)-001/0590, May 1990.
- 4) *RCRA Permitting Guide for Hazardous and Radioactive Mixed Waste Management Facilities*, DOE/EH(RCRA)9705; U.S. Department of Energy, Office of Environment, Safety, and Health, RCRA/CERCLA Division, April 1997.
- 5) 40 CFR 270.10 -- General permit application requirements.
- 6) 40 CFR 270.11 -- Signatories to permit applications and reports.
- 7) 40 CFR 270.12 -- Confidentiality of information.
- 8) 40 CFR 270.13 -- Contents of Part A permit application.
- 9) 40 CFR 270.14 -- Contents of Part B permit application: General requirements.
- 10) 40 CFR 270.15 -- Specific Part B permit application information requirements for containers.
- 11) 40 CFR 270 Subpart D -- Changes to permit.